

## **DAMAGE PATTERN OF WILD BOAR IN DIFFERENT CROPS**

By Iftikhar Hussain and Joe E. Brooks

### **A. INTRODUCTION**

Throughout much of Pakistan the wild boar (*Sus scrofa*) is a major pest affecting agricultural production. Though omnivorous, they are largely vegetarian in diet. They will consume a wide variety of seeds, fruits, young leaves, tubers and succulent stems as well as fungi, carrion, bird's eggs, reptiles and insect larvae. It is also reported in Pakistan that wild boars damaged ripe sugarcane, potatoes, wheat (both newly sown grains and again at milky stage) and rice in the milky stage. Wild boars killed from riverain forests were subsisting mainly on roots and tubers of *Scirpus* and *Cyperus*, while crops such as sugarcane, clover, and mustard were found only in a few stomachs. Animal matter, such as insects, annelids, fish, snails and rodents, constituted about 10% of all stomach contents. The stomach contents of 48 wild boars killed in Faisalabad District were examined and it was found that wheat and molasses scum were the most common items, followed by *Cyperus* tubers, maize, sorghum, cotton, mesquite pods and leaves, sugarcane and rice. Animal remains consisted mainly of earthworms, snail, crickets and a few frogs, fish, rats, lizards, one bird and carrion. Wild boar are one of the most important vertebrate pest species in sugarcane, wheat and maize, while of lesser importance in groundnut. Their damage patterns in sugarcane, wheat, maize and groundnut are described here.

#### **1. Sugarcane**

Wild boar damage sugarcane by tearing away the rind with their incisors, on stalks they knock over or those already leaning over or on the ground (Fig. 1). The rind is stripped away from 10 to 50 cm lengths of stalk, and boars consume the soft juicy inner pith. Wild boar damage is easily differentiated from rodent damage by the presence of large pieces of rind; also the damage includes the nodes, which are rarely touched by rodents. Some damaged plants are seen on the field periphery but most occur in large patches in field interiors where the animals bed down during the day light hours and along pathways they use in coming and going from field interiors. Once damaged, the stalks usually wither and die. Farmers leave them in the fields because they report that these are useless as animal fodder as cattle and buffaloes will not eat the stalks because of the boar smell.

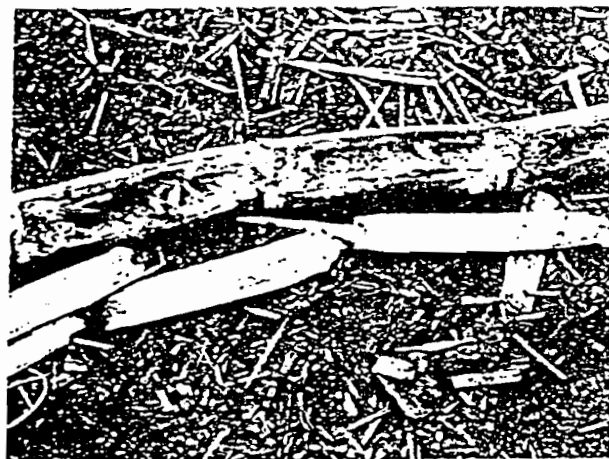


Fig. 1. Damage to sugarcane.

#### **2. Wheat**

Wild boar damage to wheat is of several kinds. The depredation is at two stages. When freshly sown and until it sprouts, boars will open dead straight furrows with their snouts, eating all the grain deposited by the seed drill, doing this so precisely that it is hard to imagine such parallel



Fig. 2. Wild boar damage to wheat showing the regurgitated fibrous material.

open furrows were not made mechanically. Again when the ripening wheat grains are at milky stage, the animals make bedding areas in the field interiors by wallowing and then spreading cut stems to make a mat to rest upon. Stems are often trampled into the ground by wild boar activity. Ground surfaces are laid bare due to wallowing and rooting activities. Finally, the stems and panicles are consumed, the boars cutting them from 20 to 40 cm above ground (Fig. 2).

### 3. Maize

Wild boar begin consuming maize when the cobs have kernels in the milky stage. Stems are knocked over with the body or snout (Fig. 3). The kernels are consumed from the cobs and sometimes the cobs also are consumed if they are sweet and soft. Wild boar also trample the maize stems into the ground and damage can be found anywhere in the field.



Fig. 3. Damage to maize cobs.

### 4. Groundnut

The wild boar root out groundnuts from underneath the plants (Fig. 4), generally a depression from 5 to 10 cm deep and as much as 30 to 40 cm in diameter. Very few empty groundnut shells are found, since most nuts are consumed with the shells. The trail of the wild boar can sometimes be followed through the field from plant to plant. Some plants are uprooted and die, while others simply have the nuts removed but the plants survive. Wild boar prefer the groundnuts in the soft, fresh growth stage before the shells harden. Positive proof of wild boar is the finding of the foot prints in the field.



Fig. 4. Damage to groundnut.

### 5. Other Crops

Rice, potatoes, sweet potatoes, peas and clover are other crops damaged by wild boar. Wild boar eat the grain of rice while walking through the field. Potatoes and sweet potatoes are damaged by digging the ground with the snout. Peas and their pods are eaten from the plants. Clover is damaged by the animals digging in the ground.

## B. Damage Assessment Methods

### 1. Picking the Fields

The selection of fields usually boils down to a randomized method of selection, which gives the least biased samples, or a road transect method. The randomized sample may be spread over a large area and this makes reaching all the fields difficult but is worth the extra time. The road transect method means a large number of fields can be sampled in a relatively short time. A third method is

the stratified random sample, where, for example, villages may be selected at random for visit, eliminating those that are difficult to reach by road. At each village, 4 to 8 fields are selected using the four compass directions from the center of the village and picking fields encountered while walking north, east, south and west. Usually using this method, 4 to 6 villages can be sampled each day, giving a total of 16 to 32 fields surveyed per day.

## 2. Methods in Fields

a) Sugarcane: Once a decision is made on which method to use, the fields are visited and the damage data taken. Damage in sugarcane, both rat and wild boar damage, tend to be clumped (Fig. 5). Wild boar use the field interiors and pathways in the field and this is where the most damage is seen. Likewise, rats tend to create most damage nearest their burrows, so this is where their damage is found. The best method to use to find damage in a field is to use transects crossing the field at several places. Samples are taken along the transect at a given number of paces from the field edge, making sure that some samples are taken near the field edges. The average distance between sampling points may best be determined in the field but as a guide, use at least 10 meters between points, perhaps more. Damage is recorded on a 2-meter sector of the line where it falls across the cane stalks. Search the area for rat-damaged stalks and record the number of damaged and undamaged stalks on the 2-m sector. Note the presence of rat burrows within or near the sampled area. Likewise, for wild boar damaged stalks, record the number damaged and undamaged. Since wild boar may be bedded down within the field interior, it is best to make these surveys in pairs of observers and it would be helpful for one person to have a shotgun loaded with shells of heavy shot or slugs as a precaution in case wild boar charge. Surveys for damage can be done when the damage first starts and cumulative damage may be recorded by visiting the same fields repeatedly for several times during the maturing phase. Or, if damage at harvest is to be estimated, visit the fields just before they are cut.

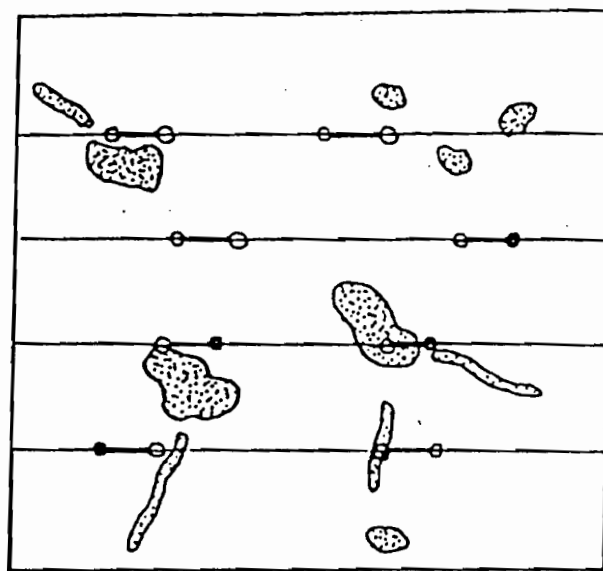


Fig. 5. Damaged areas in sugarcane fields and transect sampling points.

b) Maize: In maize fields, the damage may be found anywhere in the field. The use of transects crossing the field is again suggested, taking enough sampling points per field (4 to 6 are suggested) to cover the area well. At each sampling point, using a rope or piece of cord, lay out a quadrat of 5 by 5 meters in size and within this area count and record all boar and porcupine damaged stalks and all bird damaged cobs and all undamaged stalks and stalks with undamaged cobs. Generally two observers can do a field in this way in 20 minutes.

## 3. Damage Calculations

Percent damage for both sugarcane and maize is computed as number of damaged stalks divided by the total number of damaged and undamaged stalks times 100. In the case of boar-damaged sugarcane stalks, each dead or dying stalk represents a direct loss in sugar yield. Rat damage rarely kills the stalk and the loss in yield of sugar is computed as a percent of the damaged stalks, usually taking 32 to 43% of the percent of damaged canes as the loss in sugar yield. These figures were derived from regression equations between percent loss of sugar per acre and percent of rat-damaged cane stalks calculated for Jamaica and the Philippines.

In maize, the wild boar- and porcupine-damaged maize stalks represent a direct loss of yield, while the losses due to parakeets and crows can be computed by measuring the actual loss of kernels on the damaged cobs. This is done by measuring the rows of maize kernels actually eaten. The length of the cob kernel rows is measured and the number of rows per cob is counted. The length of the kernel rows eaten is calculated as a percentage of the total row-lengths of kernels present on the damaged cobs (Fig. 6). In the example shown, the total length of kernel rows is  $7.0 \text{ cm} \times 12 = 84 \text{ cm}$  while  $8 \text{ rows} \times 2.3$  and  $1 \text{ row} \times 2.0$  and  $1 \text{ row} \times 1.5 = 31.9$ ; damaged area  $31.9/84 \text{ (total)} \times 100 = 38\%$  damage to that cob.

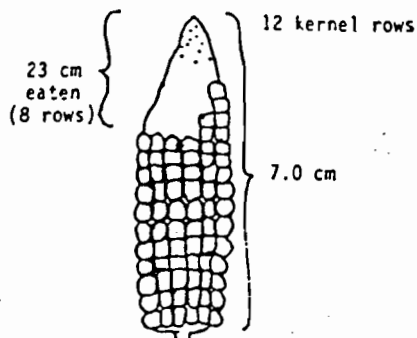


Fig. 6. Count total kernal rows and amount of kernal rows eaten to compute bird-caused maize losses.